Trend of percentage of population under the age of 20 in
Parkville, Melbourne, North Melbourne

Application of GIS
GEOM20013

Assignment 2

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Introduction

In this report, we will document the trend in the population of people under 20 in Victoria's inner metro which include Parkville, North Melbourne and Melbourne. These 3 regions are chosen to perform analysis on because it has Victoria's critical infrastructures. For example, Melbourne (CBD) has Queen Victoria Market and the Ian Potter Centre, Parkville is home to major hospitals and higher education institutions such as Royal Melbourne and University of Melbourne while North Melbourne is the home of the Arts House, Melbourne's contemporary centre for performance and interactive artforms.

These critical infrastructures attract people not just in Victoria but all over the world to work, live and study which increases the population size of these areas. According to the latest Australian official population estimates, the 2020 population forecast for North Melbourne is 19,631, and is forecast to grow to 43,303 by 2041 which has a change of 120.59%.

Hence, the increase in population size would increase the total population under 20 for these areas. For example, in 2016, Parkville's percentage of population under 20 represented 22% of the total population in that region. This influx of people under the age of 20 represent a huge responsibility for the Victoria government especially the Department of Planning, Transport and Local Infrastructure to emphasize and build facilities that would support these people and to ensure a safe environment to nurture them.

With that, the main research and analysis of this report is to investigate the percentage of population under 20 in selected Statistical Area Level 2 (SA2) regions which include North Melbourne, Parkville and Melbourne. The approach that we have used to perform our analysis is to source the data about the population size across each age groups and the total population size from the Australian Bureau of Statistics's Census Data Packs (https://datapacks.censusdata.abs.gov.au/datapacks/). Then, we perform geoprocessing to spatially visualize the percentage of people under 20 in selected SA2 regions for 2006,2011 and 2016.

The main findings of this report is that the percentage of people under 20 in these SA2 regions remain relatively stable across the spans of 10 years albeit the increase in population size. This in fact provides a framework for the department to constantly provide the infrastructures and the facilities in the same pace as before to support the young people in these regions.

Methodology

Step	Problem	Steps Description	Results	Explanation
1	Adding SA2 layer for state of Victoria	Add the layer SA2_2016_AUST from Data folder Filter the dataset to show Victoria By Adding Clause, "STE_NAME" = 'Victoria' Go to the Geoprocessing pane, and use 'Feature Class to Feature Class' tool to output the Victoria map	With that, we could filter our dataset and focus only on the SA2 layer for the state of Victoria, not the entire Australia	This allow us to focus extensively in analysing the SA2 layer for the state of Victoria and allows for faster computation
2	Choosing Data to analyse	We will be choosing the data about each age group and the total population's raw data from the 2006,2011 and 2016 Census	With this dataset chosen, we are able to start analysing our data spatially	This data packs contains information related to Person Characteristics, which contain information regarding total population of each age group
3	Converting SA2 area codes from numeric to text field	We start by bringing in the data by using the geoprocessing tool called 'Table to Table' We then convert the Region_ID to Text. This is so that we could join the SA2 spatial layer and the census table data Since, both the SA2 spatial layer is called	We perform this step to have a uniqueID called SA2_MAIN_text to join both the spatial layer and census table data. We then can analyse the data	We first bring in the data because this allows us to select the census data and produce the necessary table for our census data. We convert the Region_ID to Text because we wanted to join the SA2 spatial layer

| | | SA2_MAIN while in the table it's called SA2_MAINCODE, we add a new field at the bottom called SA2_MAIN_text.

After that, we join both the SA2 spatial layer and the census data table using the SA2_MAIN_text as the output join field. | spatially. | and the table data which has different names for the SA2 Main Code. We created SA2_MAIN_text in the census table data to act as a Unique ID to join on. |
|---|---|---|---|---|
| 4 | Calculating statistics for the trend in each SA2 area | Make new fields in the SA2 spatial layer, called Pcnt_Under_20_2016, Pcnt_Under_20_2011, Pcnt_Under_20_2006.

On the spatial layer, calculate the field to compute the percentage of people under 20 for each specific census period across the SA2 regions. | This is to get the statistics for the trend we are analysing | We chose the Percentage of people under the age of 20 as our main research area. This by adding the total population of each age group which consist of Age 0 to 4, Age 5 to 14 and Age 15 to 19 then divide by the total population across each SA2 region and multiply by 100. |
| 5 | Choosing Level 2 Statistical Areas(SA2) as project area | Select from the attribute table for the spatial layer Melbourne, North Melbourne and Parkville as the the choice of the project area | There is a blue borderline across each selected SA2 regions | We chose Melbourne, North Melbourne and Parkville as the area of analysis. |
| 6 | Using symbology, to label SA2s with trend value, percentage | Label the data which includes the trend value, percentage by choosing the field such as Pcnt_Under_20_2016.

Convert the percentage value to 2 decimal values in the Label Class. | In the 3 SA2 regions chosen, the percentage value are labelled and can be observed spatially. | To produce a good contrast and visualization of the project area compares to the entire SA2 regions in Victoria. |

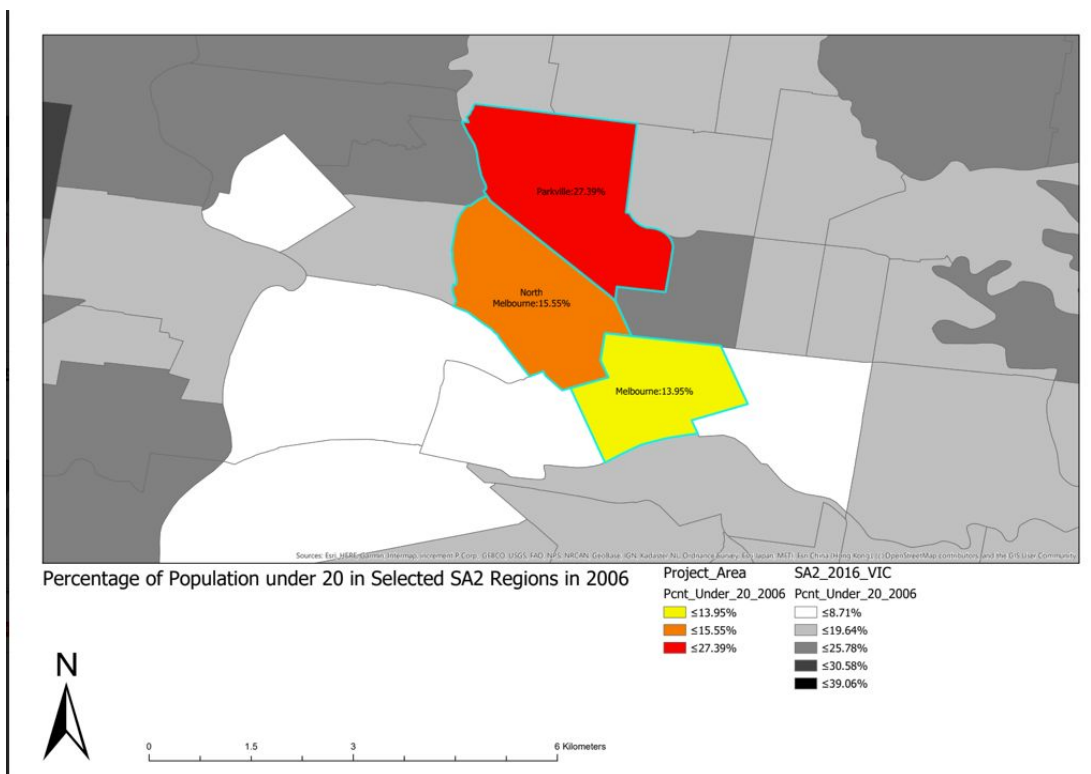|		In symbology class, choose Graduated Colours for both the entire SA2 regions and the project area but with different colour palettes.		
7	Creating Maps	Choose A3 Landscape as the layout for our analysis. Insert Title, North Arrow, Scale Bars and Legends	A Layout includes the analysis of our data that is spatially produced.	To ensure BOLTS-Border, Orientation, Legend, Title, and Scale

Results

Percentage of Population under 20 in Selected SA2 Regions in 2006

Project_Area	SA2_2016_VIC
Pcnt_Under_20_2006	Pcnt_Under_20_2006
≤13.95%	≤8.71%
≤15.55%	≤19.64%
≤27.39%	≤25.78%
	≤30.58%
	≤39.06%

Diagram 1

Percentage of Population under 20 in Selected SA2 Regions in 2011

Project_Area	SA2_2016_VIC
Pcnt_Under_20_2011	Pcnt_Under_20_2011

Project_Area Pcnt_Under_20_2011:
- ≤11%
- ≤15.76%
- ≤23.95%

SA2_2016_VIC Pcnt_Under_20_2011:
- ≤9.13%
- ≤19.67%
- ≤25.39%
- ≤30.26%
- ≤37.73%

N

0   1.63   3.25   6.5 Kilometers

Diagram 2

Percentage of Population under 20 in Selected SA2 Regions in 2016

Project_Area	SA2_2016_VIC
Pcnt_Under_20_2016	Pcnt_Under_20_2016

Project_Area Pcnt_Under_20_2016:
- ≤12.52%
- ≤15.76%
- ≤22.04%

SA2_2016_VIC Pcnt_Under_20_2016:
- ≤7.76%
- ≤18.06%
- ≤23.96%
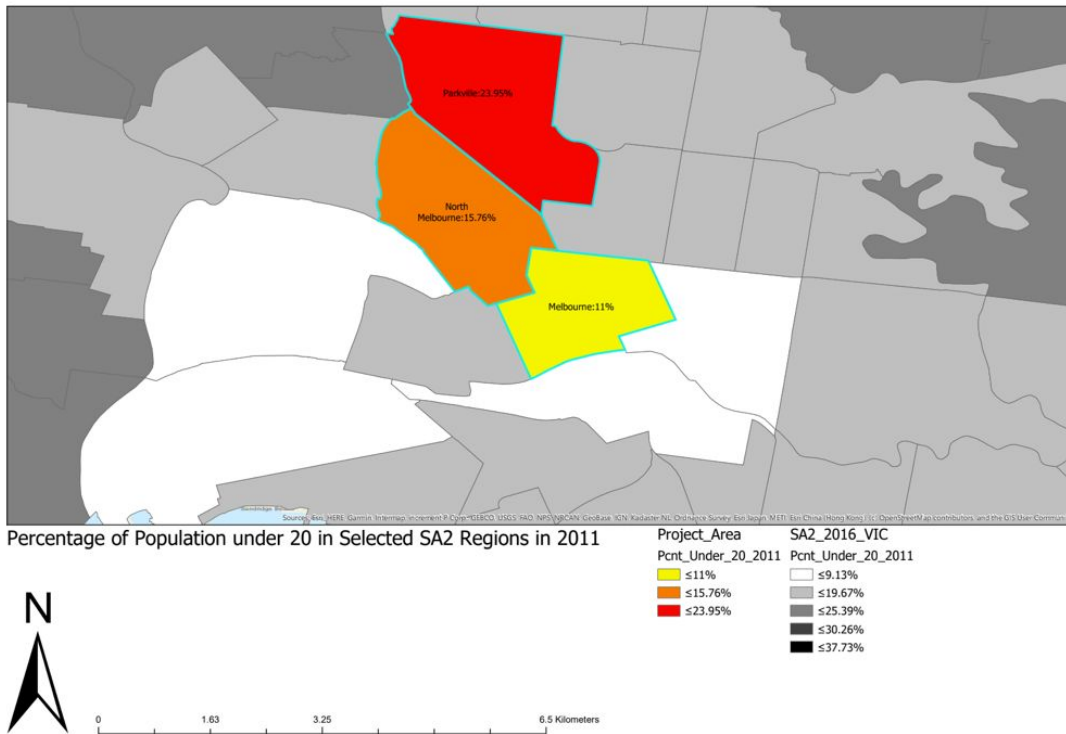- ≤29.54%
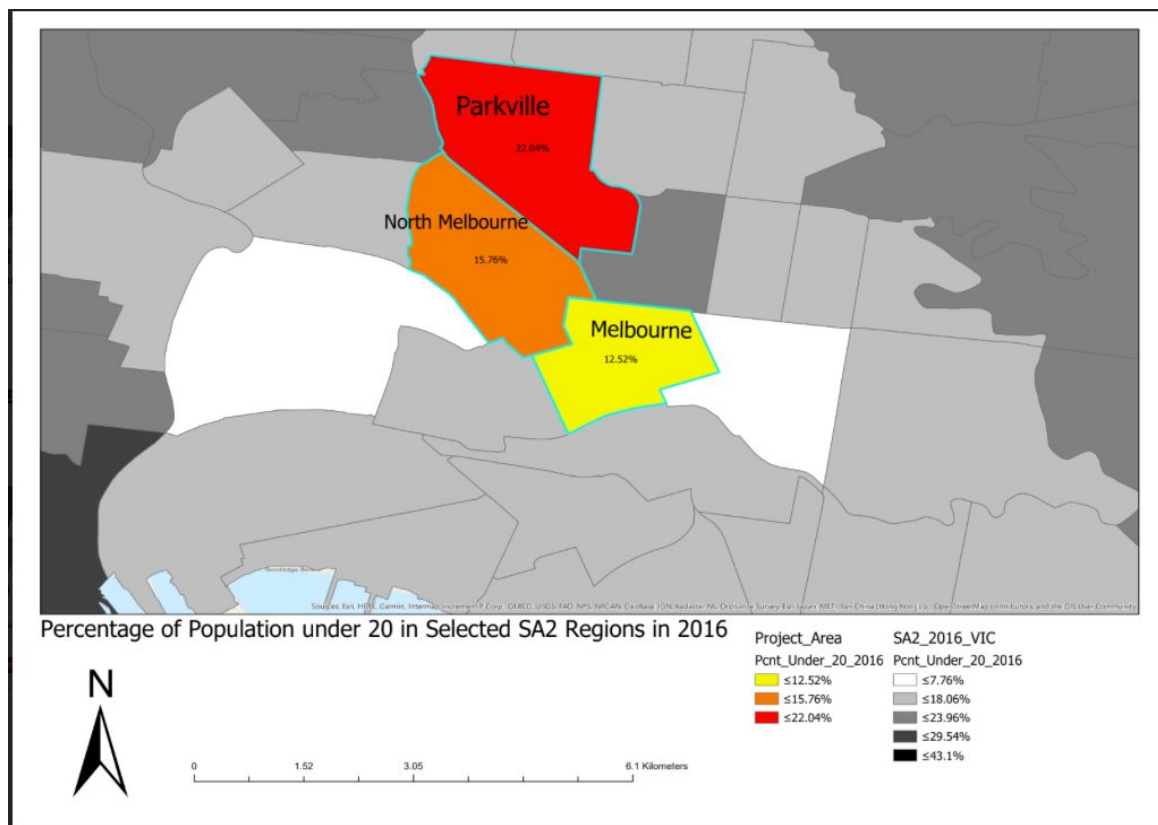- ≤43.1%

N

0   1.52   3.05   6.1 Kilometers

Diagram 3

Discussion

The results above shows that in the span of 10 years, Parkville has the largest percentage of people under the age of 20 followed by North Melbourne and Melbourne. For Parkville, the percentage of population under the age of 20 has been consistently representing more than 20% which in 2006 it represents 27.39% followed by a drop to 23.95% in 2011 then followed by another drop to 22.04% in 2016. While for North Melbourne, the percentage of population has been consistently representing more than 15% which in 2006 it represents 15.55% followed by a slight increase to 15.76% in 2011 which stayed constant at 15.76% in 2016. Lastly, for Melbourne, the percentage of population has been consistently more than 11% in which in 2006 it represented 13.95% followed by a drop to 11% in 2011 and an increase to 12.52% in 2016.

In the span of ten years, although Parkville has been consistently ranked as having the largest percentage of people under the age of 20, it experienced a gradual decrease. First of all, Parkville has the largest percentage of people under the age of 20 due to the fact that University of Melbourne is located there but there is a gradual decrease in the percentage of people under the age of 20. This would suggest that the overall percentage of the budget allocated to Parkville to build parks and support young people could be reduced.

North Melbourne has consistently stayed constant at approximately 15%. Although the total population size in North Melbourne has been increasing in the span of ten years which you can refer to in Appendix Table 1, The percentage of people under the age of 20 stayed constant.

This is a strong indicator to the department that the overall percentage of the budget allocated to North Melbourne should stay constant to consistently build infrastructures such as parks, skate park facilities and youth community spaces to support the younger generation.

Melbourne has experienced both a slight decrease and a slight increase in the span of ten years which in 2016 it has 12.52 percentage of population under 20. If we refer to Appendix Table 1, Melbourne has experienced the largest increase in population size among the three regions, this can be highlighted by the total population size in 2011 with 20,030 people which increased by 86.32% to 37,321. This major increase in population size does not affect the percentage of people under 20 which stayed constant. Hence, the department should increase the budget to build infrastructures to support young people but the overall percentage of the budget allocated to build these infrastructures in Melbourne should stay relatively the same.

Conclusion

All in all, the findings can be summarized that the percentage of young people across these three regions with a dense population size due to the fact that it hosted critical infrastructures in Victoria has stayed relatively constant. The findings strongly suggest that infrastructures and facilities being built for people under the age of 20 should not be cut down but stay relatively constant to provide a safe and conducive environment for young people to develop and grow. There are some limitations to this study as the study did not do a comprehensive analysis across the entire Melbourne City areas but rather focus on three specific regions in Melbourne City. Hence, the study should be extended to provide a further analysis of the SA2 regions in Melbourne City which could provide a better understanding of the main purpose of the report which is to study the percentage of people under 20 across regions that have critical infrastructures which attract a high number of population size.

Reference

- About Parkville suburbs
  (https://www.melbourne.vic.gov.au/about-melbourne/melbourne-profile/suburbs/Pages/parkville.aspx)
- About Melbourne suburbs

(https://www.melbourne.vic.gov.au/about-melbourne/melbourne-profile/suburbs/Pages/melbourne.aspx)
- About North Melbourne suburbs (https://www.melbourne.vic.gov.au/about-melbourne/melbourne-profile/suburbs/Pages/north-melbourne.aspx
- Parkville's 2020 and 2041 population forecast (https://forecast.id.com.au/melbourne/about-forecast-areas?WebID=170)
- North Melbourne's 2020 and 2041 population forecast (https://forecast.id.com.au/melbourne/about-forecast-areas?WebID=160)
- Melbourne(CBD)'s 2020 and 2041 population forecast (https://forecast.id.com.au/melbourne/about-forecast-areas?WebID=140)

Appendix

SA2 MAINCODE	SA2 NAME	Total Person in Census 2006	Total Person in Census 2011	Total Person in Census 2016
206041122	Melbourne	14389	20030	37321
206041123	North Melbourne	13147	15497	20637
206041124	Parkville	4980	6193	7409

Table 1

Note. From *2016Census_T01_VIC_SA2.csv* in the datapack, *2016_TSP_SA2_for_Vic_short-header.zip* by Australia Bureau of Statistics (ABS), retrieved from https://datapacks.censusdata.abs.gov.au/datapacks/. Copyright 2016 by Australia Bureau of Statistics (ABS).